COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE APPLICATION OF THE SOUTH CUMBERLAND WATER DISTRICT, OF CUMBERLAND COUNTY, KENTUCKY, FOR APPROVAL OF CONSTRUCTION AND FINANCING	))))	CASE NO. 9862

O R D E R

IT IS ORDERED that South Cumberland Water District ("South Cumberland") shall file an original and seven copies of the following information with the Commission with a copy to all parties of record no later than April 24, 1987. If the information cannot be provided by this date, South Cumberland should submit a motion for an extension of time stating the reason a delay is necessary and include a date by which it will be furnished. Such motion will be considered by the Commission. South Cumberland shall furnish with each response the name of the witness who will be available at the public hearing for responding to questions concerning each item of information requested.

1. Provide hydraulic analyses, supported by computations and actual field measurements, of typical operational sequences of the existing water distribution system. These hydraulic analyses should demonstrate the operation of all pump stations and the "empty-fill" cycle of all water storage tanks. Computations are to be documented by a labeled schematic map of the system that shows pipeline sizes, lengths, connections, pumps, water storage

tanks, wells, and sea level elevations of key points, as well as allocations of actual customer demands. Flows used in the analyses shall be identified as to whether they are based on average instantaneous flows, peak instantaneous flows, or any combination or variation thereof. The flows used in the analyses shall be documented by actual field measurements and customer use records. Justify fully any assumptions used in the analyses. (Note - these analyses should use the same schematic as the analyses of the proposed water distribution system previously filed to facilitate comparison).

2. Provide a summary of any operational deficiencies of the existing water system that are indicated by the hydraulic analyses or that are known from experience.

3. In order to obtain realistic results when utilizing computer hydraulic analyses to predict a water distribution system's performance, engineering references stress the importance of calibrating the results predicted to actual hydraulic conditions. This calibration process should include matching field measurements to the results predicted by the computer over a wide range of actual operating conditions. As a minimum this should include average and maximum water consumption periods, as well as "fire flow" or very high demand periods.

Based on the above, explain the procedures used to verify the computer hydraulic analyses filed in this case. This explanation should be documented by field measurements, hydraulic calculations, etc.

4. The computer hydraulic analyses filed in this case are based on a diurnal customer demand pattern varying from .34 times the average peak day demand to 1.79 times the average peak day demand. The average peak day demand is defined as 2 times the 24-hour average demand.

Most engineering references state that instantaneous customer demands can peak at 3 to 15 times the 24-hour average demand. In addition, most engineering references also state that a water distribution system should be designed to meet the maximum hourly demand of its customers.

Based on the above information state exactly what measurements were made of South Cumberland's maximum hourly usage. If the maximum hourly usage was not measured directly, state why it was not.

In addition, state how the diurnal pattern for South Cumberland's system as well as the appropriate demand multipliers were determined. This response should be documented by appropriate field measurements.

5. Provide a pressure recording chart showing the actual 24-hour continuously measured pressure available at the locations listed below on South Cumberland's system. Identify the 24-hour period recorded, the exact location of the pressure recorder and the sea level elevation of the recorder. Also state the schematic junction number nearest the location of the pressure recorder.

a. Water lines in the vicinity of all connections to the City of Burkesville.

b. The water storage tank near Littrell.

c. The water storage tank near Claywell.

d. The water storage tank near the Mt. Pisgah Church.

e. Water line in the vicinity of junction 20.

f. Water line in the vicinity of junction 25.

g. Water line in the vicinity of junction 29.

h. Water line in the vicinity of junction 32.

i. On the suction and discharge sides of the existing pump station on Scott Ridge Road if this pump station is still in use.

j. On the suction and discharge sides of Pump No. 2.

k. On the suction and discharge sides of Pump No. 3.

l. On the suction and discharge sides of the existing pump station near Webb Store if this pump station is still in use.

6. Provide a list of each of South Cumberland's water storage tanks. Give the location, capacity, and overflow elevation of each tank. Explain how water is supplied to each tank.

7. Provide a list of each of South Cumberland's existing pump stations. Give the location, number of pumps and their rated capacities, and the purpose of each pump station. Explain how the operation of each pump station is controlled. Provide a copy of the pump manufacturer's characteristics (head/capacity) curve for each of South Cumberland's existing pumps. Identify each curve as to the particular pump and pump station to which it applies. Also state if pump is in use and if pump will remain in use, will be abandoned or will be replaced.

8. The computer hydraulic analyses filed in this case for the proposed water distribution system indicate that the potential exists for the system to experience low pressure (less than 30 psig) at Nodes 2 and 21. Pressures at this level are in violation of PSC regulation 807 KAR 5:066, Section 6 (1). Provide details of any preventive measures or additional construction South Cumberland intends to perform to protect against this type of occurrence. Details should be documented by hydraulic analyses and field measurements. Also provide an explanation as to why these two junctions are marked not applicable in the hydraulic analyses.

9. The computer hydraulic analyses filed in this case for the proposed water distribution system indicate that the potential exists for the system to experience high pressure (more than 150 psig) at Nodes 23 and 35. Water service provided to customers at this pressure level is in violation of PSC regulation 807 KAR 5:066, Section 6 (1).

Information filed with the hydraulic analyses states that there are no pressures in the distribution system that exceed the rated capacity of the pipe. The information also states that at locations which may experience very high pressures which are very high (above 160 psig), ductile iron pipe with a rating of 350 psig has been installed. However, no mention of the reduction of pressure to customers was made. Provide details of any preventive measures or additional construction South Cumberland intends to perform to ensure that no customer receives water service with pressure above 150 psig.

10. The Bid Schedule in the specifications lists one fire hydrant to be installed as part of this project. The proposed location of the fire hydrant cannot be found on the plans. Provide clarification on this matter.

The "Recommended Standards For Water Works" by the Great Lakes - Upper Mississippi River Board of State Sanitary Engineers ("Ten States Standards") and the Insurance Service Office ("ISO") both have requirements for providing fire protection. Both organizations recommend a minimum of 6-inch diameter water lines and the capability to deliver at least 250 gallons per minute at a residual pressure of 20 pounds per square inch for a minimum of 2 hours from any fire hydrant. Based on the above, provide information as to the purpose of the proposed fire hydrant. If the purpose of the proposed fire hydrant is to provide fire protection, provide hydraulic analyses demonstrating the capability of South Cumberland's system to comply with the requirements of the ISO and the Ten States Standards. If the fire hydrant is proposed for reasons other than fire protection state why other equipment was not considered.

11. Of the 56 new users to be added as a result of the project, how many users are residential and how many are commercial?

12. South Cumberland's schedule of tap fees and other non-recurring charges was approved in June, 1983.

a. Are the approved tap fees and non-recurring charges compensatory?

b. If not, is it anticipated that increases in such charges will be necessary in the foreseeable future.

c. If such increases are anticipated, explain why they have not been requested as a part of this case.

Done at Frankfort, Kentucky, this 26th day of March, 1987.

PUBLIC SERVICE COMMISSION

Robert D. Stevens Jr.
For the Commission

ATTEST:

Executive Director